Denied a Seat

Projected Shortfalls in Postsecondary
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Executive Summary

By 2030, the shortfall in enrollment capacity at Inland Empire postsecondary institutions could potentially result in thousands of qualified students being denied a seat, with a disproportionate impact on low-income and students of color. Meeting the postsecondary needs of the residents of the Inland Empire (IE) is of urgent importance. As efforts in the IE to increase high school postsecondary preparation and community college transfer readiness are increasingly successful, educational leaders must anticipate the rising demand for seats at local colleges and universities and plan for the possibility that without intervention the existing capacity constraints will be further exacerbated, with even more qualified students being turned away. Expanding on work undertaken by College Futures Foundation to analyze regional postsecondary capacity challenges across California,[1] we created a simulation tool to predict demand for higher education in the IE in the next decade according to different levels of student preparation.

Using this tool under several different simulated scenarios, we calculated new projections that build upon the efforts of College Futures Foundation but also account for potentially greater success of education interventions and policies in the region. By accounting for the potential success of initiatives in the region, we believe the demand could be greater than previous projections anticipate. Meeting the educational needs of students in a region comprised of two thirds people of color and majority Latinx, and where many families struggle with poverty and a dearth of living wage jobs, presents a critical issue of equity. According to exploratory projections modeled in this report, if educational reforms at regional high schools and community colleges are successful, by 2030 the shortfall in enrollment capacity at local postsecondary institutions could potentially result in between 22k and up to 39k qualified students without easy access to a local college education. While there is no easy solution to this problem, as a region we must come together to identify ways to expand operation capacity, space capacity, or a combination of both, to support eligible students.

Note: Initially, GIA considered the implications of the COVID-19 pandemic in the projections based on increasing enrollment patterns observed in previous economic recessions; however, the unemployment and enrollment patterns anticipated based on prior recessions differed

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[1] College Futures Foundation. 2019a. "Making Room for Success: Addressing Shortfalls at California's Universities."

substantially from current conditions.[2] While economic downturns typically result in increases in postsecondary enrollment, the opposite has been true for enrollment in the wake of COVID-19, with colleges and universities in the IE and across the country experiencing precipitous declines. Although we do not know how long COVID-related patterns will persist, we expect the longer-term demand projections in this report to remain valid. It is nonetheless important to note however that **the value of the modeling used in this research is that as conditions change, numbers can be updated, and projections revised**.

Introduction

College graduates have higher wages and lower rates of unemployment than other workers and this is especially true in the face of increasing automation and during economic recessions (including during COVID-19).[3] The Public Policy Institute of California (PPIC) predicts that by 2030 California will have a shortfall of 1.1 million workers with a bachelor's degree,[4] and within the Inland Empire this gap is estimated to be 61,000 (with an additional labor market gap of 25,000 employees for occupations requiring a graduate degree).[5] When increasing automation or an unexpected crisis such as the COVID-19 pandemic results in rising rates of unemployment, people with less education have disproportionally fewer options for employment.

The Inland Empire has one of the lowest educational attainment rates in the state, with only 2 out of every 9 adults (23%) over the age of 25 having completed a bachelor's degree, compared to 35% statewide,[6] leaving many Inland Empire residents in economic peril even when the overall economy is strong. In fact, the Inland Empire has the largest share of employment in at-risk industries of any metro area in the state,[7] and during the pandemic faced unemployment rates as high as 15%, compared to pre-COVID (December 2019) regional unemployment rates as low as 3.5%.[8] To attract investment and stimulate economic development to boost the economy and strengthen resilience in our workforce, we cannot afford to ignore the increasing educational demand in the Inland Empire.

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[2] Schmidt, E. 2018. "Postsecondary Enrollment Before, During, and Since the Great Recession," P20- 580, Current Population Reports, U.S. Census Bureau, Washington, DC.

[3] Congressional Research Service. 2021. "Unemployment Rates During the COVID-19 Pandemic: In Brief"; Parker, K., Minkin, R., & Bennett, J. 2020. "Economic Fallout from COVID-19 Continues to hit Lower-Income Americans the Hardest." Pew Research Center.

[4] Johnson, H., Mejia, M. C., & Bohn, S. 2015. "Will California Run Out of College Graduates?" Public Policy Institute of California.

[5] College Futures Foundation. 2019b. "California Labor Market Assessment." Analysis prepared by McKinsey & Company.

[6] American Community Survey, 2019 1-Year Estimates.

[7] Bohn, S., Mejia, M.C., & Lafortune, J. 2020. "How Will the Coronavirus Affect California's Economy?" Public Policy Institute of California.

[8] State of California Labor Market Information Division, www.labormarketinfo.edd.ca.gov/file/lfmonth/rive$pds.pdf.

Although 13% of California's high school seniors reside in the Inland Empire, the region has only approximately 7% of the total seats available statewide at California Community Colleges, UCs, CSUs, and independent colleges.[9] In addition, according to the PPIC the Inland Empire currently produces 12% of California's "A-G eligible" high school graduates[10]—which is roughly proportional to our share of the state population—but only 6% of the state's bachelor's degrees.[11] Despite current pandemic-related declines in postsecondary enrollment,[12] the increases in recent years in high school A-G course completion and community college transfer-readiness (along with rising dual enrollment and support for FAFSA completion), college eligibility and demand at local universities are expected to steadily climb over the next decade. If maximally effective, these educational reforms may increase the demand for higher education in the Inland Empire to levels even greater than previously anticipated. There may also be additional future demand for higher education among individuals who have lost jobs due to COVID once transmission of the virus has been controlled.

Despite this great need, prior to the pandemic the California State University San Bernardino (CSUSB) campus—the region's top destination for students pursuing a bachelor's degree[13]—was already impacted, receiving more applications from qualified freshmen and transfer students than can be admitted (including within areas of great need such as health care fields like nursing).[14] As increasing numbers of eligible students apply, campuses raise admission requirements in order to manage enrollment.[15] This disparity is only expected to widen. The College Futures Foundation report highlights university capacity gaps across California, particularly in Southern California, and estimates that in the Inland Empire alone in ten years there will be approximately a 20,000 gap between students qualified to attend local universities (36,000) and the slots available to them (16,000).[16] This College Futures Foundation report lays the groundwork for understanding higher education capacity and demand challenges in the next decade using historical enrollment patterns for new students and under circumstances of

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[9] College Futures Foundation. 2019c. "California Higher Education Undergraduate Capacity Assessment," p. 101. Analysis prepared by McKinsey & Company. For methods, see p.46.

[10] A-G coursework is required for admission to the University of California and the California University systems. https://www.cde.ca.gov/ci/gs/hs/hsgrtable.asp

[11] Johnson, H., Cook, K., & Mejia M. C. 2017. "Meeting California's Need for College Graduates: A Regional Perspective." Public Policy Institute of California.

[12] https://www.latimes.com/california/story/2022-01-14/californias-undergraduate-enrollment-dropped-by-about-250-000-during-pandemic-years

[13] College Futures Foundation. 2019c. "California Higher Education Undergraduate Capacity Assessment," p. 101. Analysis prepared by McKinsey & Company. For methods, see p.5.

[14] https://www.csusb.edu/admissions/impaction-information, accessed on November 15, 2021.

[15] Campaign for College Opportunity. 2021. "Shut Out: The Need to Increase Access at the University of California and the California State University.

[16] College Futures Foundation, 2019a. "Making Room for Success: Addressing Shortfalls at California's Universities." Even if graduation initiatives at the UC and CSU are successful, CSU analyses suggest that this would provide approximately a 13% increase in capacity, which would decrease the capacity gap by around 2,000 students. ("California Higher Education Undergraduate Capacity Assessment," p. 93.)

incremental improvements in student academic preparation, and anticipates annual growth of 10% of high school students prepared to enter a bachelor's degree program.[17]

In this report, we expand on this work by describing the development of a projection tool and estimates of possible demand for higher education based on several different models which vary depending on the relative success of initiatives that target academic preparation for a bachelor's degree. This tool employs system dynamics modeling to predict the postsecondary education demand for the Inland Empire by 2030 based on current educational reforms in higher education.

Development of Model and Tool

Description of Model

The data and variables available were used to create a model that mirrors the IE's education system, describing the various postsecondary paths that high school students and adult learners can take. A simplified version of the model is displayed below (Figure 1), and the full model is presented in the Technical Appendix (Figure A-1). The model considers three pipelines into 4-year degree programs (see Figure 1). The first pipeline is comprised of high school graduates who are A-G ready and enroll directly into a 4-year degree program. The second pipeline combines high school graduates (both A-G ready and not A-G ready) and adult learners who attend community college before transferring into a 4-year program. The third pipeline includes adult learners (aged 20 and above) who enroll directly into a 4-year degree program.

Figure 1. Simplified Demand Model

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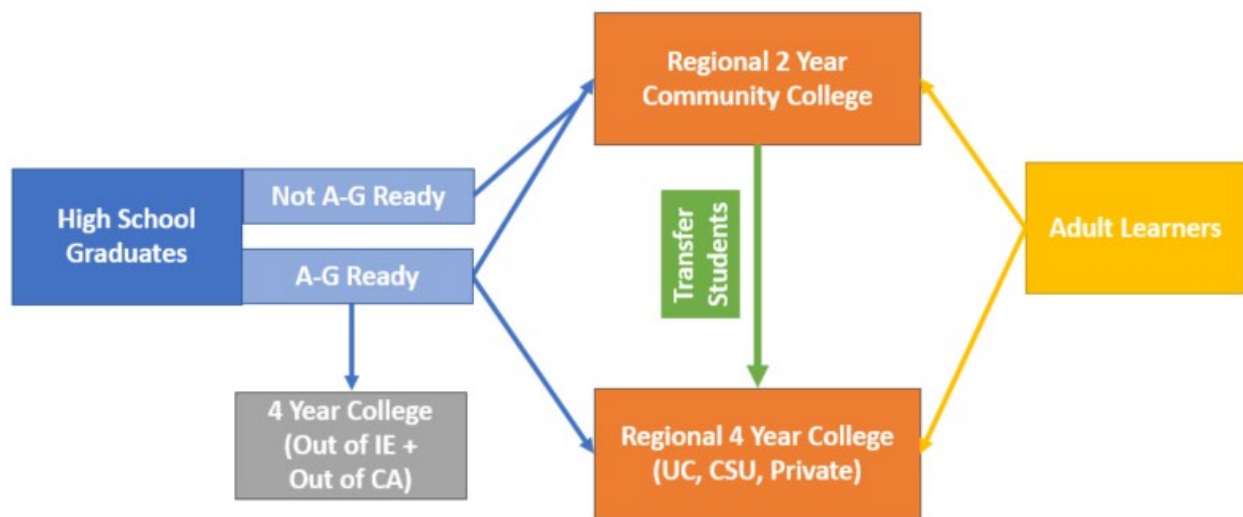
[17] College Futures Foundation, 2019c. "California Higher Education Undergraduate Capacity Assessment."

Three Scenarios

Using the model described above, we ran three possible scenarios that vary according to the extent of potential successes of high school postsecondary preparation and college transfer initiatives in the IE through 2030.[18] Note that the adult learner parameters (the yellow paths in the model) remain static across all scenarios, whereas the A-G and transfer pathways are dynamic and reflect relevant pertinent state policy conversations and/or educational system goals, for which there were not comparable frameworks for adult learners.

The Baseline Success Scenario

The **Baseline model** uses a) current rates of A-G completion, b) current rates of transfer from local community colleges to four-year universities, which includes both the high school pipeline and the adult enrollments in the community college; and c) current rates of adult learners' enrollment for both 2-year and 4-year degree.

The Medium Success Scenario

The **Medium Success model** assumes that a) students in the IE achieve A-G course completion rates comparable to students currently in the third quartile of California high school students[19] and b) community college students reach *half* of the California Community College Vision for Success transfer goal of 35% increase in transfer to a UC or CSU,[20] and c) rates of adult learners' enrollment remains unchanged from the baseline.

The High Success Scenario

The **High Success model** assumes that a) IE high school students reach the highest statewide rate of A-G completion and b) that local community college students achieve the *full* Vision for Success transfer goal of 35% improvement, and c) rates of adult learners' enrollment again remains constant.

The three different models—Baseline, Medium Success, High Success—are summarized in Table 1.

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[18] All of the scenarios are based on 2018 data, the most recent data available across most of the parameters at the time the model was developed. 2019 had missing data points for many variables at that point in time. The CDE had the data for 2018-19, however the data in CCC data mart was only through 2018. Please see the Technical Appendix for more information about the data used in each model.

[19] These data were triangulated by the authors using information from California Department of Education: https://cgu0-my.sharepoint.com/:x:/g/personal/manish_ranjan_shrivastav_cgu_edu/EVaM1rAL3D1BtNEx9sdRqEoBMK6jsGqQ4X0moLCn3U--zA?e=HCXmgw

[20] https://www.cccco.edu/About-Us/Vision-for-Success/vision-goals

Table 1: Summary of Model Scenarios

Models	Description
Baseline	- A-G eligibility rate remains static (40%). - Community college transfer rate remains static: high school graduate pipeline (5.28%) *plus* adult learner pipeline (4.72%). - Rate of adult learners remains static (2-yr: 3.5%; 4-yr: 3.1%)
Medium	- A-G eligibility reaches the top of the <u>third quartile</u> in California (47.5%). - Community college transfer rate reflects <u>half</u> the Vision for Success goal:[21] high school graduate pipeline (7.09% increase) *plus* adult learner pipeline (5.55%). - Rate of adult learners remains static (2-yr: 3.5%; 4-yr: 3.1%)
High	- A-G eligibility reaches the <u>highest rate</u> in California (60.7%) - Community college transfer rate achieves the <u>full Vision for Success goal:</u> high school graduate pipeline (8.15% increase) *plus* adult learner pipeline (6.38%) - Rate of adult learners remains static (2-yr: 3.5%; 4-yr: 3.1%)

Tool Development and Methodology

We employed a system dynamics modeling approach to develop the projection tool. This modeling approach was developed in the mid-1950s and has been applied to economic, social, public health, and environmental issues, however it has been underutilized in the education space. System dynamics predictions may be used to inform decisions pertaining to policy, planning, programming, and more.[22] This approach capitalizes on key variables that are essential in the system to create a computer simulation model, accounting for how the variables may change over time.

The interactive projection tool was developed using the NetLogo software package, an open platform programmable modeling environment. We used publicly available data from the

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[21] The number of students transferring to UC and CSU was increased by 35% and then the ratio of total transfer was calculated. In a sense (though not exactly) it means increase of 35 percent in the UC/CSU transfer. By this definition it means that it should be 35% of the baseline high school (5.28%) and adult learner (4.72%) pipelines. However, it is not exactly 35% as our model gives equal weight to out of state transfer and private transfer. Therefore, the high demand of 8.15% is higher than 35% of 5.28%.

[22] Hirsch, G. B., Levine, R., & Miller, R. L. 2007. "Using System Dynamics Modeling to Understand the Impact of Social Change Initiatives." American Journal of Community Psychology, 39(3-4), 239-253.

California Community Colleges Chancellor's Office student database (Data Mart)[23] and the California Department of Education.[24]

Multiple projections can be created based on different scenarios that may occur with these identified variables, as evidenced by our three models (Baseline, Medium Success, and High Success). The software creates an interactive screen where inputs can be calibrated based on changing assumptions, leading to variable predictions in enrollment demand. **Thus, this tool can be refined as needed based on changing circumstances or updated assumptions**. The variables and connecting paths, along with the interactive modeler screen, are presented in the Technical Appendix.

Simulation Tool Development	**Accounting for Successful Initiatives**
System dynamics modeling is used in computational simulation models of complex systems (e.g., economics, public health, etc.) to formulate predictions based on key variables in the system. GIA created a modeling tool that can be easily calibrated and updated to continuously improve projections.	Given the number of initiatives currently being implemented in the IE, we wanted the ability to model the potential impact of greater improvements in A-G eligibility and rates of transfer readiness on demand for higher education than was included in other existing models.

Note: Rates entered into the tool can be further refined through consultation and collaboration with regional stakeholders according to relevant expertise and evolving circumstances. GIA welcomes further discussion, collaboration, and input from partners in the IE to continuously improve the accuracy of the projections.

Findings

Using the interactive system dynamics modeler simulation tool, we projected the demand for new student enrollment at 2- and 4-year higher education institutions in 2030 based on the three scenarios described above. The projections reported in Figure 1 break down the demand by the type of student (high school graduate, adult learner, transfer student). The total projections for each of the scenarios and the expected capacity are summarized in Table 2.

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[23] https://datamart.cccco.edu/DataMart.aspx
[24] https://www.cde.ca.gov/ds/ and aggregation information: https://www.cde.ca.gov/ds/sd/sd/acgrinfo.asp. We used data from 2016-2018. While this is a short period of time to determine trends for the model, the California Department of Education changed the formulas used to calculate graduation rates and has advised against comparing the current data to data from prior years.

It is important to note that the precision of the models is constrained by the availability and accuracy of the data. Additionally, the numbers presented are not definitive; they fluctuate based on the model. These values are meant to provide an *estimation* of possible demand to expect in 2030. (It should be noted that these projections generalize across demographic and economic differentiations; future analyses may wish to explore differences in demand between different ethnic, demographic, and economic groups.)

Our general premise is that the greater the academic performance of high school and community college students, the greater the demand that will be placed on regional postsecondary institutions. However, universities in the Inland Empire tend to have lower "exclusive" application rates than some other public institutions in the state, and it's likely that increasing student success in the IE will produce greater demand for access to institutions *outside* of the region as well, which could temper local demand. To account for this in our projections, we created a parameter using university attendance trend data of IE high school graduates to estimate student desire to attend university out of the area.[25]

**Table 2. New Student Capacity & Projections for Three Scenarios**

	2-Year Institution	4-Year Institution	Total
Expected Capacity[26]	**23,000**	**16,000**	**39,000**
Projected Demand Considering Successful Initiatives			
1. Baseline	29,817	31,398	**61,215**
2. Medium Success	32,265	36,633	**68,898**
3. High Success	36,529	41,378	**77,907**

While our estimates are in line with other predictions of higher demand than capacity, ***these exploratory projections highlight that this demand may be even greater than currently anticipated***. Assuming enrollment trends rebound following the COVID-19 health crisis, and if education reforms are increasingly successful over the next ten years, by 2030 Inland Empire colleges and universities may have to turn away between 15,000-25,000 students seeking a 4-year degree and 7,000-14,000 seeking a 2-year degree (see Figure 2), resulting in total gaps in postsecondary seats ranging between 22,000-39,000 students (See Figure 3).

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[25] The desire to attend "out of region" estimates for each success model are as follows: Baseline (23%), Medium Success (27%), and High Success (35%), however fewer students will be able to leave the region for college than desire to do so. As student performance improves, the demand to attend a university outside of the IE will increase. On the other hand, capacity at many other statewide institutions is also limited, and therefore out of region acceptance rates may decline as the number of applications increases. In fact, when out of region student migration is high it is due to attendance at *out of state* institutions, not *out of region*—perhaps because acceptance rates are higher at some universities outside of California. Ultimately, many students may face the option to attend university out of state, attend a private institution, or attend an IE community college (which will also ultimately put pressure on the Inland Empire public 4-year institutions).

[26] Undergraduate capacity for new student enrollment based on: College Futures Foundation. 2019. "California Higher Education Undergraduate Capacity Assessment," p. 93.

Figure 2. Projected Demand at 2- and 4- Year Institutions in 2030 at the Baseline, Medium Success, and High Success Scenarios
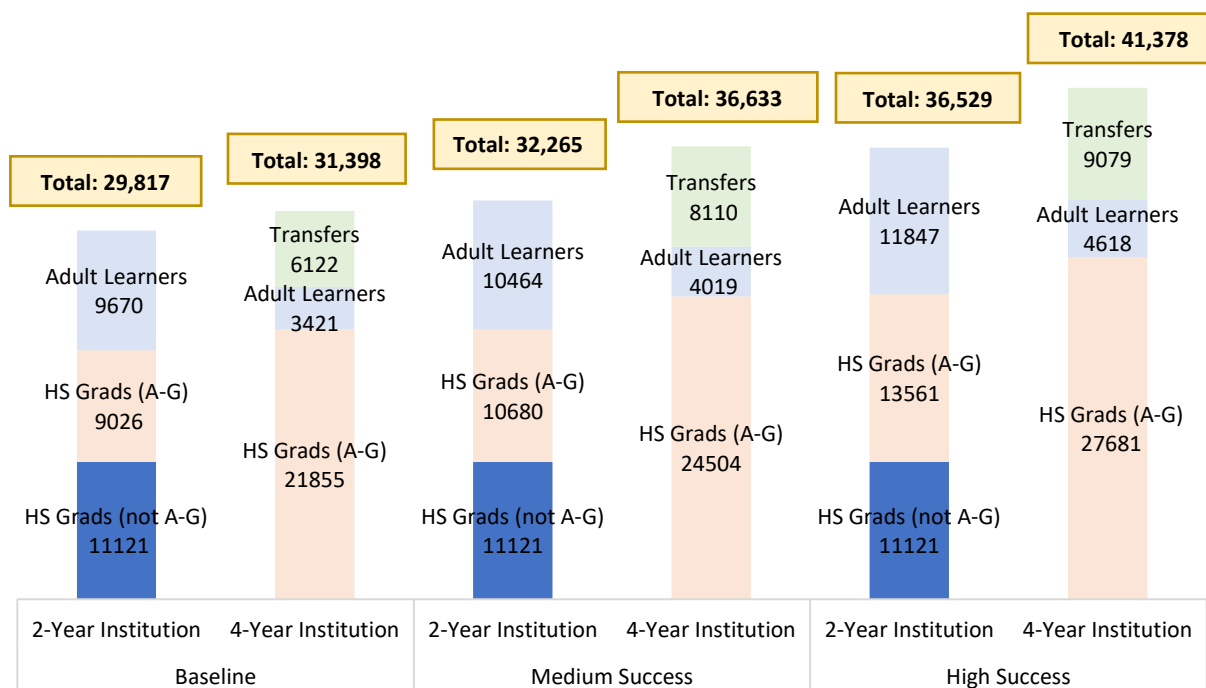

Conclusions

The IE may not fully attain the college readiness and transfer success rates in our High Success model—or this attainment may be delayed due to the lingering effects of COVID-19—however given the wide-ranging efforts across the region supporting A-G coursework, dual/concurrent enrollment, FAFSA completion, the elimination of remediation following the passage of the landmark AB705 legislation, and increasing Associate Degrees for Transfer (ADTs), the projections outlined in this paper are within the realm of possibility and present an urgent call to action. Furthermore, reforms associated with the California Community Colleges Guided Pathways movement will increasingly move students through the system more quickly, thus creating even more demand at the university; and, given the sheer number of community college students,[27] even modest successes will lead to large increases in transfer-ready students, thus underscoring that this mismatch of capacity and demand requires decisive action to anticipate and plan for the higher education needs in the Inland Empire in the coming years.

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[27] According to the California Community Colleges Student Success Metrics, there were 175k non-special admit students enrolled in at least one term at Inland Empire community colleges in 2019-2020 (125K with the goal of earning a 2- and/or 4-year degree). https://www.calpassplus.org/LaunchBoard/Student-Success-Metrics. While community college enrollments are currently lower than normal due to the COVID-19 pandemic and the related economic recession, it is possible that this, along with the need for retraining of displaced workers, will result in additional pent-up demand for college once these conditions are somewhat improved, thus potentially creating an additional, albeit perhaps temporary, backlog of demand not accounted for in the current model.

The problem of impacted public universities in California is not new. Even as public education reforms have successfully prepared more students for college over the past quarter century, the CSU/UC systems have turned away an increasing number of students due to lack of funding, enrollment caps stipulated in California's Master Plan (the 1960 blueprint for state higher education across the UC, CSU, and California Community Colleges), and limited space,[28] resulting in many tens of thousands of qualified students being denied access to higher education. (In 2018, 73,000 eligible students were turned away from the CSU and UC systems,[29] and a growing number of California's high school graduates are leaving the state to attend college elsewhere,[30] a brain drain the Inland Empire can ill afford.) Notably, the impacts of these capacity constraints are not felt uniformly across the state, with regions most in need of increasing their populations' educational attainment, such as the Inland Empire, facing the greatest gap between supply and demand.

Figure 3. Demand and Capacity Gap Projections for Inland Empire Postsecondary Institutions in 2030
Number of Students, Thousands

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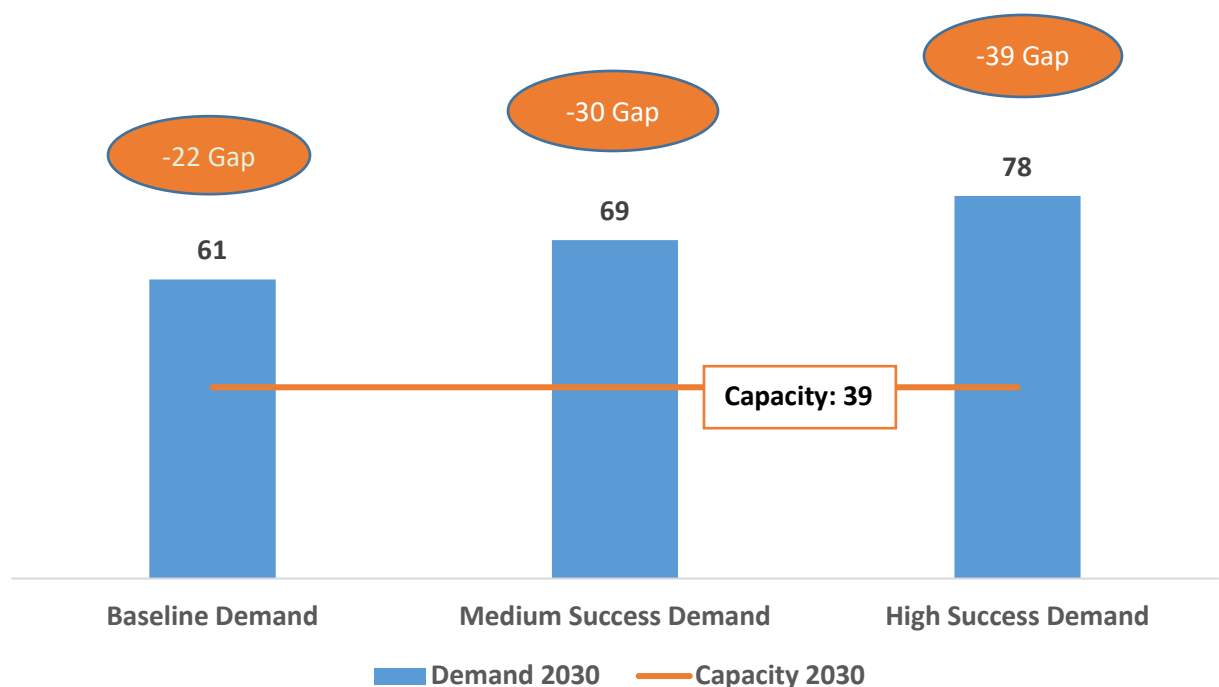
[28] The Campaign for College Opportunity. 2015. "Access Denied: Rising Selectivity at California's Public Universities."

[29] College Futures Foundation, 2019a. "Making Room for Success: Addressing Shortfalls at California's Universities."

[30] Murphy, P. et al. 2019. "Higher Education in California." Public Policy Institute of California.

Nonetheless, recent studies commissioned to examine the demand for and feasibility of a new campus in the CSU/UC systems have found that projected enrollments alone do not warrant the construction of new campuses, particularly in light of the expenses entailed in building a new site.[31] These studies conclude that increased future enrollment growth can be accommodated at both the CSU & UC systems through current long range plans and by more efficient use of existing facilities, including increasing summer enrollments and evening/weekday classes, reducing non-California admissions, and expanding online coursework.

Online learning had been growing in recent years prior to COVID-19,[32] and this accelerated tremendously in the past year as most California colleges and universities transitioned to online learning during the pandemic. The further expansion of remote instruction offers one potential solution for increasing access. But even without capital expenditures for land or buildings, ensuring we have sufficient instructors, advisors, and other support staff will be challenging given that salaries and benefits represent the greatest expenditures per student.[33] Additionally, expanding online coursework would entail considerable investments in course development, professional development, and technological capacity. Great care will also need to be taken to ensure that learning outcomes continue to show improvement and that online instruction does not widen equity gaps for racialized minority, first generation, or Pell Grant students. These investments in strengthening online instruction might have even more far-reaching impacts, not built into the models in this report, if improvements also facilitate the return of some of the nearly 25% of the Inland Empire adults who have attained "some college but no degree."[34]

There are no easy answers to the capacity challenges, particularly given preexisting statewide budget constraints which were further compounded by the effects of COVID-19. It should be noted, however, that while there has been substantial recent economic recovery from the pandemic-related recession, even with the current boost in higher education funding investment in higher education in California remains far lower today than in the past (11% of the state budget compared to 18% in the 1970s).[35] The fact remains that whether done through expansion of physical space or operational capacity or some combination of the two, if we want to develop a well-trained workforce able to attract a more diverse industry base to balance out the disproportionately high percentage of low-paying and "at-risk" occupations it is imperative that we start planning how to provide improved college access in the Inland Empire. Industries seeking to expand or relocate to new regions assess a number of factors, and the skill level of

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[31] California State University Office of the Chancellor. 2020. "Enrollment Demand, Capacity Assessment, and Cost Analysis for Campus Sites"; Legislative Analyst's Office. 2017. "Assessing UC and CSU Enrollment and Capacity."
[32] Cook, K., & Mehlotra, R. 2020. "Expanding Enrollment Capacity at California State University." Public Policy Institute of California.
[33] ibid. Salaries and benefits make up 60% of total per student expenditures at CSU, compared to 12% for capital expenditures.
[34] American Community Survey, 2019 1-year estimates.
[35] The Campaign for College Opportunity, 2022. "Shut Out: The Need to Increase Access to the University of California and the California State University."

the local talent is an important consideration. It is essential not only for the futures of individual Inland Empire students seeking an education — many of whom are low income, first generation, and Latinx— but also for the overall economy of the region, particularly as we recover from the current pandemic, that these projected future enrollment demands are given serious consideration by colleges, universities, and the State of California as budget decisions are made. The Inland Empire has shown itself to be open to and capable of innovation across all 12 community colleges, both public universities, bi-county K-12 public school districts, and a network of support organizations working together toward educational systems reform. The long-term economic prospects and vitality of the IE, as well as the entire state, require us to start planning now how to address this shortfall.

The projections included here are not definitive predictions, but rather an overview of key factors to consider to ensure that we are prepared to meet the postsecondary needs of Inland Empire students. We invite partnership to refine and further develop the tool as circumstances and underlying assumptions evolve.

Acknowledgements
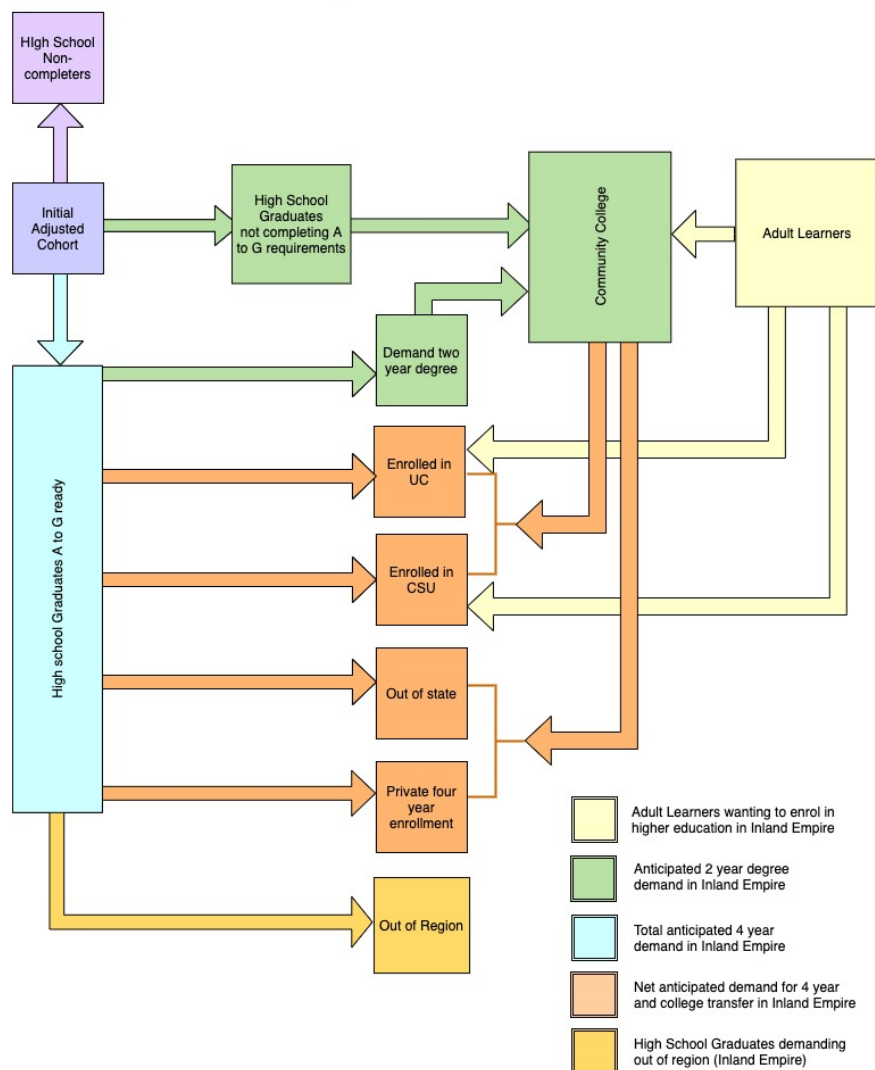
Technical Appendix

This appendix explains the rationale for the model and describes the data sources and input ratios used to predict the demand for 4-year and 2-year postsecondary programs in Inland Empire. As described in the paper, a system dynamics modeling approach was employed. The model was created using publicly available data from the California Community Colleges Chancellor's Office student database (Data Mart)[36] and the California Department of Education (CDE)[37] from 2016-2018. While this is a short period of time to determine trends for the model, the CDE changed the formulas used to calculate graduation rates and has advised against comparing the current data to data from prior years.[38]

Rationale for the Model: Variables and Structure

The structure of the model was informed by the various paths students in the Inland Empire may take to attend a 2-year or 4-year college program (see Figure A-1). There are two populations considered: students graduating from high school and adult learners. The initial adjusted cohort describes the number of high school graduates in the Inland Empire in 2018 (the year in which the most recent complete data was first available when the model was simulated). When the model was developed, it was assumed that there would be no change in the demography based on migration.

Adult learners have the option to either enroll in a 2- or 4-year program. It was assumed that both high school graduates and adult learners will seek degrees

**Figure A1: Full Demand Assessment Model: Program Paths for High School Students and Adult Learners**

[36] https://datamart.ccco.edu/DataMart.aspx

[37] https://www.cde.ca.gov/ds/

[38] https://www.cde.ca.gov/ds/sd/sd/acgrinfo.asp

from institutions near their region of residence. A screen shot of the interactive software used for the calculations is shown in Image A-1.

Image A-1. Simulation Tool: Interactive Modeler
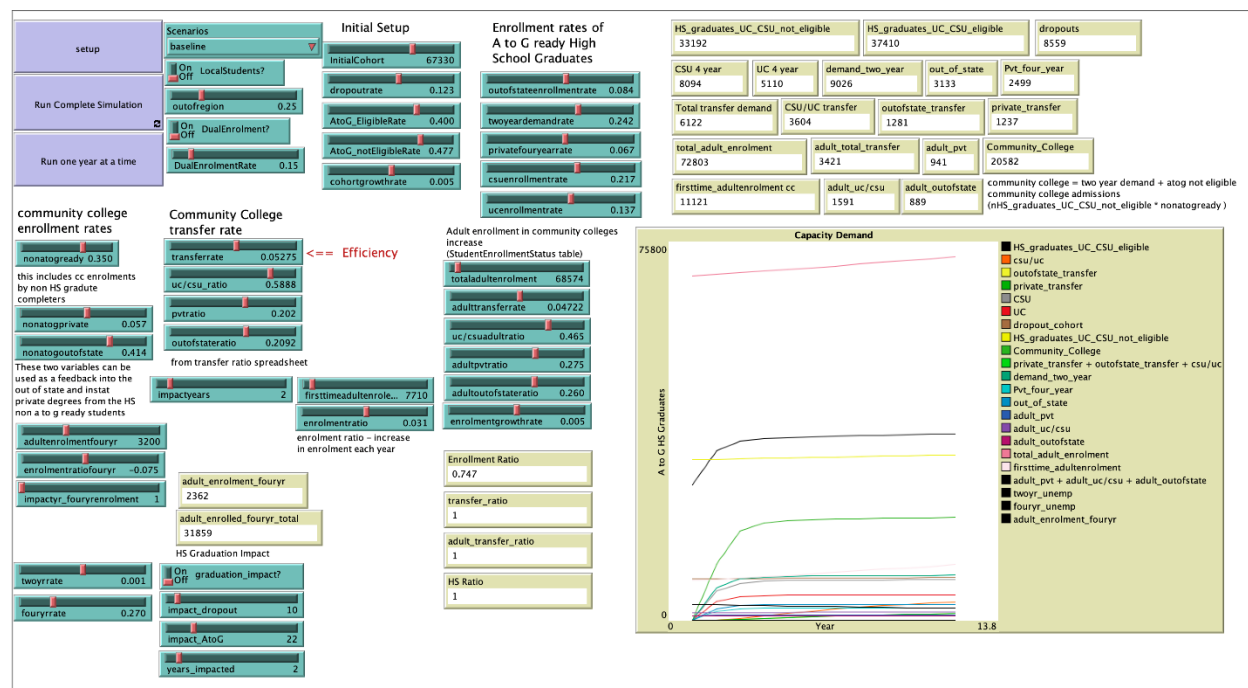
Description of Data & Model Scenarios

Using data sourced from the California Department of Education (DataQuest) and the California Community Colleges Chancellor's Office student database (Data Mart) websites, ratios were calculated for each path that high school students and adult learners may take.

The data for the transfer of students to a four-year institution were sourced from the Management Information Systems (MIS) Data Mart of California Community College Chancellor's office. The transfer data for first time students were collected and divided into age cohorts. These data were divided into two parts to differentiate between the pipeline of adult students and students coming from high school into community colleges and then transferring into 4-year institutions. Adult students were defined as students aged 20 years and above enrolling for the first time in the community college. The data were available for the years 2015 to 2018, and the ratios (shown in Table A-1) were calculated within this constrained data period. The data breakdown for the transfer student pipeline did not differentiate between the transfer rate for UCs and CSUs, and therefore a combined ratio was taken for the public institutions and a separate ratio was calculated for in-state private transfers and out of state transfers.

High school students have three options: (1) not complete high school, (2) graduate from high school without completing A-G requirements and attend community college, and (3) graduate from high school with A-G requirements and attend either a 2-year program, a 4-year in-state public program (i.e., UC or

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CSU school), an out of state institution, or a private institution. For modeling the high school postsecondary demand, two assumptions were made:

1. The demand for the 4-year program is represented by the UC/CSU eligible graduates from the high schools in the region and all the transfer-ready community college enrollees.
2. The regional UC/CSU eligible graduates from the high school and all the transfer-ready community college enrollees within the region demand 4-year program within the region.[39]

As described in the report, three scenarios with varying levels of success based on initiatives implemented in the Inland Empire were built to predict the demand at 2- and 4- year programs). The Baseline scenario assumes no changes in A-G eligibility or transfer rates. For Medium and High Success scenarios, different ratios of A-G eligibility rates were incorporated into the model based on the distribution of current rates across the state of California. The transfer rates were informed by the California Community Colleges Vision for Success goal of a 35% increase in transfer students. Determination of the rates of success for the three scenarios for sensitivity analysis of success of student outcome improvement efforts in Inland Empire is summarized below:

> Baseline – this scenario assumes business as usual, with no change in the rate of high school graduates or A-G eligibility. Further, the UC/CSU transfer rate remains constant and does not show any improvement in the period of projections, and the rate of adult learners (adult transfer rate) sees no change. The adult enrollment is constant.

> Medium Success – this scenario assumes medium success in efforts to improve student outcomes, with the rate of high school graduate **A-G eligibility matching the top of the third quartile in the state (e.g., 47.5%)**. Further, the UC/CSU **transfer rate achieves half the Vision for Success goal (e.g., 17.5%)**; the increase in ratio of adult learners (adult transfer rate) also matches this transfer rate. The adult enrollment remains constant.

> High Success – this scenario assumes high success in efforts to improve student outcomes, with the rate of **high school graduate A-G eligibility matching the highest in the state (e.g., 60.7%)**. Further, the UC/CSU **transfer rate achieves the Vision for Success goal (e.g., 35%)**; the increase in the ratio of adult learners (adult transfer rate) also matches the transfer rate. The adult enrollment remains constant.

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[39] Although we know from CDE college-going rate data that a small percentage (around 5%) of UC/CSU-eligible IE students enroll in college out of state, the current model incudes them in the IE postsecondary demand, since we are uncertain about the reason for students seeking college out of state, for instance it may be partially due to lack of availability at 4-year institutions.

Table A-1. Ratios Used for Each Scenario: Baseline, Medium Success, and High Success

Variables	Baseline	Medium Success	High Success
A-G grads	40.0%	47.5%	60.7%
High School Transfer	5.28%	7.09%	8.15%
Adult Transfer	4.72%	5.55%	6.38%
Adult enrollment for 4-yr	3.1%	3.1%	3.1%
Adult enrollment for 2-yr	3.5%	3.5%	3.5%
out of region ratio (of A-G eligible HS graduates)	23.00%	27.00%	35.00%
Adult enrollment in CC (of total CC enrollments – A-G ready plus A-G not ready (taken from CC transfer data for age 20+)	32.50%	32.50%	32.50%

Variable Definitions

High school (as defined by the CDE): A secondary school that grants a regular high school diploma and includes, at least, grade twelve (Elementary and Secondary Education Act (ESEA) section 8101(28)). For the purpose of our model the schools in the Inland Empire (Riverside and San Bernardino counties) are only considered.

High school graduates (as defined by the CDE): Those cohort students who receive the standard high school diploma awarded to the preponderance of students in a State that is fully aligned with the State's standards and does not include a general equivalency diploma, certificate of completion, certificate of attendance, or any other similar or lesser credential, such as a diploma based on meeting Individualized Education Program (IEP) goals. The term "regular high school diploma" also includes any "higher diploma" that is awarded to students who complete requirements above and beyond what is required for a regular high school diploma (ESEA section 8101[43]; 34 Code of Federal Regulations [C.F.R.] § 200.34[c][2]) OR as specified in California Education Code (EC) section 51225.1, a student in foster care, a student who is homeless, or a former juvenile court school student who transfers between schools any time after the completion of the pupil's second year of high school, completes all requirements specified in EC Section 51225.3.

The "**initial adjusted cohort**" in our model consists of the total number of high school students in the model. It represents the four-year adjusted cohort, for Inland Empire (Riverside and San Bernardino Counties), which per the California Department of Education website is based on the number of students who enter grade 9th grade for the first time, adjusted by adding into the cohort any student who transfers in later during 9th grade or during the next three years and subtracting any student from

the cohort who transfers out, emigrates to another country, transfers to a prison or juvenile facility, or dies during that same period. (Report Glossary on https://dq.cde.ca.gov/dataquest/dqcensus/CohRate.aspx?agglevel=county&year=2017-18&cds=36)

High school completion rate – this is the ratio of students who complete high school with a diploma (high school graduates as defined above) compared to "initial adjusted cohort."

The "**high school non-completers**" in our model consists of those cohort students who (1) do not graduate with a regular high school diploma, (2) do not otherwise complete high school, or (3) are not still enrolled as a "fifth year senior."

The "**high school graduates A to G ready**" in our model consists of those cohort graduates who meet all the A to G requirements as determined for admission to University of California or California State University.

The "**high school graduates not completing A to G requirements**" in our model consists of those cohort graduates who do not meet all the A to G requirements as determined for admission to University of California or California State University.

"**Community college**" in our model consists of those cohort graduates who are enrolled in a community college in the Inland Empire, based on the flows from the "initial adjusted cohort."

The "**demand two-year degree**" in our model consists of those cohort graduates who despite being "high school graduates A to G ready" still enroll for 2-year program in a community college in Inland Empire.

The "**enrolled in UC**" and "**enrolled in CSU**" in our model consists of those cohort graduates who go on to enroll in the UC and CSU. This number flows from the "high school graduates A to G ready." This also includes the flow from the "adult learners" and transfer from "community college."

The "**out of state**" and "**private four-year enrollment**" in our model consists of those cohort graduates who enroll in any institution which is out of state or to a private four-year program within the state compared to total students meeting the A to G requirements. This number flows from the "high school graduates A to G ready." as well as the transfer flow from the "community college."

The "**adult learners**" in our model consists of those students who were of age 20 or more and were not enrolled in a high school in the year prior to their enrollment.

Transfer: A transfer is a flow from the "community college" to the 4-year degree program. A transfer happens when a student completes the requirements for transfer in a community college and enrolls into a 4-year program. The transfer includes adult transfers.

Transfer rate – this is the ratio of students (who are not categorized as adult learners) completing the requirements for transfer in a community college compared to total students enrolled in the community college.

Adult transfer rate – this is the ratio of adult students (defined as "adult learners") completing the requirements for transfer in a community college compared to total students enrolled in the community college.

Out of region ratio – this is an estimated ratio of Inland Empire A-G eligible high school graduates attending four-year institutions outside of the Inland Empire based on National Student Clearinghouse aggregate StudentTracker reports from districts across Riverside County as well as the Chaffey Joint Union High School District in San Bernardino County, from 2013-2014 to 2019-2020. This ratio for out of region movement is an approximation calculated by triangulating existing data, and we assume for the purposes of this report that this ratio is uniform across all school districts in the Inland Empire. In addition, we assumed that students who prefer community college are likely to attend a regional college, and therefore the out of region flow will predominantly consist of A to G ready students (and therefore why with the increase in A-G eligibility we assume the out of region ratio will also go up).